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ABSTRACT

Reading has been viewed both as a product and as a process. The product view of reading is generally associated with static information produced by testing techniques. A major difficulty with the product view seems to be that reading is treated as though it is stopped in time, captured in the static scores of tests. This feature of the product view will have to be dealt with to avoid misisomorphism between a product theory of reading and the complex, changing referent for that theory as it exists in process. The process view of reading is concerned with the total process of reading from beginning to end. Two important aspects of the process view are the author and the reader. The author's graphic output is the reader's graphic input. A communicative transformation occurs when the reader, independent of the author, moves into the time and place conditions that permit sense perception of the author's graphic output. From the meaning, constructed, reconstructed, or both, the reader constructs knowledge. The analogies of meaning are in long term memory, fully available for intensive processing. (WR)

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READING: PRODUCT AND PROCESS IN LANGUAGE USE.

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READING: PRODUCT AND PROCESS

Reading can be viewed as a product, manifest in the observable phenomena of test scores. Reading can also be viewed as a process, a succession of events in time. Both views are useful and both are beset with advantages and disadvantages. The product viewpoint has a long, influential history in reading research and instruction. Recent insights generated by linguistics and psycholinguistics have pressed the process viewpoint to the forefront. Though we often think that new knowledge will simplify the difficulties in understanding a complex phenomena; in reading, new knowledge seems to be leading us into greater complexities, at least for a substantial portion of the foreseeable future.

The product viewpoint reaches its apex in micromodels and paradigms of behavioral research. The process viewpoint is much more encompassing. It presents useful insights in a broader framework of research and generates macromodels that attend to learning and instruction as well as cognition, language, and reading. While the product view deals with parts and conditions, it repeatedly commits reductionistic fallacies. The process view leads to Gestalt-like generalizations that can be useful with real children in real schools, but they can be just as difficult and misleading as reductionistic paradigms. Over generalization and the difficulties of postulating unobservable entities pose serious problems. For instruction, it appears necessary that we take the risks that accompany the process view. The reasons are embedded in the implications of the product view of reading.

Reading as a Product

The product view of reading is usually associated with the static information produced by testing techniques. Emphasis is on measurement, an enterprise that is not sufficiently mature to deal with the full complexities of change (C. Berieter, 1963, pp. 3-20). Strategies to organize the results of tests for use as an explanatory theory have dominated thinking about reading as a product.

Factor analysis, a matrix of correlations of sub-skill test scores, is an example (J. Holmes and H. Singer, 1966). Validity of organizing test scores to describe the complex phenomena of reading rests in what the tests selected really do measure (R. Farr, 1969). Are the tests themselves valid? Are tests of all pertinent facets of reading included? Are important aspects of reading left out because valid tests do not yet exist? These questions are not properly answered and pose the heart of the disadvantages of the product view.

The strategies of organizing test results may someday become the elements of an empirically based, explanatory theory of reading. At this point in time, the thrust is little more than statistical manipulation (K. Goodman, 1969). When valid tests of the elements of language, cognition, and interaction with graphic symbols are developed, theory beyond mere description of magnitude, difference, and relationships will still have to be developed to explain the quantifications.

The direction of the product theories will probably be organized around the functions of language; language as it facilitates communication between individuals and language as it operates in thought (J. Carroll, 1964, p. 4). A major difficulty with the product view is that reading is treated as though it is stopped in time, captured in the static scores of tests. This feature of the product view will have to be dealt with to avoid misisomorphism between a product theory of reading and the complex, changing referent for that theory as it exists in process.

We as professional educators have added to the product viewpoint difficulties. We have permitted, and in fact encouraged, the public to seek inadequate, uninterpreted test information to evaluate the progress of young readers. It is as though we prefer to report the results of a standardized test than to demonstrate a child's reading abilities with materials that are interesting and useful to the child in the reality of the classroom situations which we create. Some school districts actually publish summary scores from standardized tests in local newspapers, somehow hoping that people will understand what is happening in reading. Invariably people come to conclusions, but these conclusions do not reflect the real state of affairs in reading with the readers in question in the situations of concern.

The end we should seek to produce as a result of reading instruction is a reader who is competent to read a variety of materials that are

necessary and interesting to that reader. Except at the extremes, the standardized test merely compares readers with one another. Laymen often express surprise that half of the readers who take a test score below average. This should not be a surprise, but since it is, we can be assured that we are misleading the public by reporting in this manner. What follows from this reporting technique is a movement to teach readers to perform better on the tests. The product sought is higher scores rather than competent reading.

Suffice it to say, the product view of reading is presently inadequate for instruction though it holds some promise for some specific types of research. The problem of reductionistic fallacy probably can not be eliminated from the product view. That is, treating static parts or conditions to reading as though they somehow add up to a dynamic whole evident in process will continue to be an attempt to depart from logic by equating a whole to a portion of the parts or phenomena accompanying those parts. In contrast, the process view of reading can avoid reductionist fallacy.

Reading as a Process

The process view of reading offers some advantages over the product view. Foremost, by treating reading as a process, the pitfall of reductionism can be avoided. The total process from beginning to end becomes the object of our attention. The gaps that exist, because we can not observe every aspect of the process, become candidates for further study. A lack of observed data is not evidence for the conclusion that nothing is occurring. This is a crucial difference between the product and process views of reading because most of the reading process takes place in the thoughts of the people involved.

We have not yet learned to observe one another's thoughts. We can only guess that thinking is going on and postulate the ways in which it occurs. Some progress is occurring in this area. Some evidence for treating language processing as an integrated whole is suggested in studies where parts of the brain are missing or damaged (A. Luria, 1970). Until further developments, we are limited to postulations and deductive techniques for piecing together the process. Relationships between external stimulus, inner speech, and synthesizing (U. Neisser, 1967, pp. 214-215) warrant careful examination. A

perusal of models of reading reveals a bee's nest of controversy (I. Athey, 1971; D. Entwisle, 1971; and R. Wardhaugh, 1971).

We read to comprehend an author's meaning and ". . . . reading is never pursued for its own sake, even in literature" (K. Goodman, 1970, p. 21). If we are to examine how a reader reconstructs an author's meaning, we must know something about meaning and something about how it is constructed by the author. Most views of reading have played down the author's role and centered on the interaction of the reader at the point of perceiving print, probably because this is the point in the reading process where observable measurable phenomena seems most readily available. The view presented here speculates considerably beyond that point.

The Author

We can assume the author's fund of ideas is greater than what he will actually write. The author faces two constraints. First, much of what the author thinks is qualitative; impressions and feelings that can never be represented linguistically. Most of the author's qualitative ideas are left out of the writing process unless they are qualitative aspects of language as in poetry or stylistic features.

Second, of the fund of linguistically encodeable ideas, only a small portion is selected. The author selects ideas that lend themselves to units of meaning that can be managed in the writing task he has undertaken.

The author's ideas may be thought of as knowledge, both linguistic and qualitative. The transformation from this amorphous state to manageable meaning units is predominantly a selection process, but other operations accompany selection. Analogies and relationships are structured on many scales.

The selection process yields meanings. Meanings are analogies wherein an idea represents something other than itself. A thought meaning can represent an object, a situation, another idea, a complex set of related ideas, or a host of other combinations of whatever the author is able to think, but all must lend themselves to representation in linguistic form.

At this point, the author's language structures become very influential. His syntax, his lexicon, his dialect, subdialect, and ideolect bear upon how he works with the selected units of meaning. Clausal relationships are conceived to represent the meanings. Phrases and other syntactic structures are marshalled into a web of structures so that the meanings begin to hang together. The structures of language assigned to meanings at this point have been called deep structures by linguists because they are not directly expressed. We can only speculate that deep structures exist and try to build a theory that accounts for what we actually observe.

The author internally assigns surface structures or actual sentence forms to his deep structures. A clausal relationship can become a sentence. Phrases become parts of sentences with verbs, subjects, and other syntactic elements that are placed in relationship to one another.

An idea in deep structure form can be transformed to surface structure in many different ways. Any speaker of English has a host of ways of saying the same thing. The actual sentences that are selected or constructed to express deep structure relationships are called surface structures. These surface structures have an internalized existence previous to external expression. That internal state is in the author's thinking. Of course, this is not to deny that editing and rethinking goes on after the initial expression. The view present here is an oversimplification, but it is useful because it generates insights and serves as a base. The internalized surface structure, postulated here, sets the conditions for written expression.

The internal surface structures finally become part of the observable world as the author writes them. The production of written sentences is graphic output. This graphic output represents the encoded ideas of the author. All that preceded graphic output was unobservable. Only by introspection, retrospection, and postulation can we guess at what exists in the process to this point.

Graphic output becomes independent of the author. Should the author choose, his graphic output can be widely disseminated as in books that are published in large numbers. Graphic output is preservable, available to readers long after an author is dead. The author may have created graphic output strictly for his own personal use, as

a memory aid as in the notes a student takes, or personal bookkeeping records. Through the storage and dissemination of graphic output, man has extended some control over time and place and the constraints of face to face speech communication.

The Reader

The author's graphic output is the reader's graphic input. A communicative transformation occurs when the reader, independent of the author, moves into the time and place conditions that permit sense perception of the author's graphic output. The print does not change, rather the human environment of the print undergoes a change. When the reader comes into play, the graphic output of the author becomes the object of the reader's attention.

It is at this point in the reading process that a great many research studies concerned with reading have focused. Perceptual studies, eye movement studies, typographic studies, and a host of verbal learning paradigms have been generated about this aspect of reading. The explanation for this focus is simply that the reading process produces observable conditions at this stage. What is crucial here is that the reader sees the printed material and can begin his part in the reading process.

It has been said that the reading process is like an iceberg in that only a small portion of it is observable. The tip of an iceberg belies its great hidden bulk. The bit of the reading process that is observable is supported by a host of underlying inobservable operations. Once the reader has perceived the author's graphic output and made it his own graphic input, the process becomes internal again.

It is at this point in the reading process that psycholinguistic findings concerning memory produce insights. Sensory store, short term memory, and long term memory are concepts with considerable empirical backing (F. Smith, 1971, pp. 77-79). A visual image is held in sensory store for a second or less before another image presses in to take its place. Some of what is held in sensory store can be selected for storage in short term memory for a few seconds. Only about seven items can be held in short term memory and new information is constantly vying for the limited number of available slots thus

limiting what can be held for processing. Long term memory seems to have a large capacity but retrieval requires complex organizational strategies. The long term memory can receive only about one item in four or five seconds. Exactly how these three concepts of memory operate together in the reading process is a complex problem that is not fully understood (V. Kumar,1971). In the process as depicted in the linear model here, suffice it to say their function is recognized as an important source of unanswered questions.

The reader's internal surface structure may be held in any or all three of the memory forms for processing for differing time periods. We know that if the reader can't capture and hold the graphic display, no opportunity for processing can exist.

What probably happens in fluent reading is that sensory store holds images of words or phrases long enough for the short term memory to accommodate them. Then the short term memory's seven or so slots hold something about as large as a sentence or several clauses, providing words are chunked together, along with internal stimulus from the long term memory. The long term memory provides the information for organizing the information. Language information seems to permeate all three memory stages, perhaps because it is automatic as a result of constant use, both receptive and expressive. In any case, the internal surface structure must be held in some form for processing.

The perceived and internalized surface structures still do not bear meaning or knowledge for the reader in this linear concept of reading. The next step is the assignment of clausal and phrasal relationships to the surface structure.

Just as the author could produce a number of surface structures to represent a particular set of deep structure relationships, the reader may assign any one of a number of deep structure relationships to a particular surface structure. It is here that the reader's dialect, subdialects, and ideolect play a part in directing the assignment of deep structural relationships. It is here too that we can gain a sense of the effect of ambiguity in a particular piece of writing. Greater ambiguity increases the number and variety of deep structural relationships that fit a particular surface structure.

Once deep structures are assigned, the reader can begin to get

at meanings. The analogies the reader constructs form units of meaning. The reader's meanings are probably predominantly linguistic forms, but the qualitative aspects of thought can be influential.

Comprehension is often thought of as this part of the process. The reader is believed to be reconstructing the author's meanings. In reality, the process is probably closer to a construction process than a reconstruction process for in an initial reading, the reader's operations result in structures that are new for the reader. Reconstruction is a function of relating the reader's structures to the author's structures. The intervening stages present a myriad of opportunities for differences to generate between the author's meanings and the reader's meanings. Dialect differences (K. Goodman, 1965), environmental context, memory interference (F. Smith, 1971), and creative thinking are possible contributors to the construction of divergent meanings by the reader.

From the meanings, constructed, reconstructed, or both, the reader constructs knowledge. The analogies of meaning are in long term memory, fully available for intensive processing. Full interaction with the reader's experiential background is possible. Here the reader infers, draws conclusions, analyzes, and evaluates. The cognitive structures of the reader's experience are brought to bear on the new input and a reorganization of ideas takes place.

The qualitative features of the reader's imagination may become part of the process. The knowledge the reader constructs is not limited to linguistic forms. The knowledge construction is internal, and only by eliciting some observable response can we get some glimpse of this internal state of affairs. Comprehension tests are attempts to get at this part of the process. The complexity of even this oversimplified concept of reading makes it understandable and clear why comprehension is so difficult to test. The reader's knowledge simply is not readily available to anyone but the reader.

Implications for Instruction

This view of reading as a process implies a specific set of principles for organizing for instruction. These principles are not

directions or techniques of how to do it, rather they represent a conceptual framework that can aid the professional educator as a decision-maker. For convenience, some of the implications are listed below.

1. Reading is inseparable from language and thought. Therefore, teach reading as a content involved process. This means reorganizing skill-bound teaching strategies.

2. Reading is not a precise match between the reader's reconstructions and the author's constructions. Therefore, spend less time on objective testing and concentrate on tactics that accommodate diversity.

3. Reading is a psycholinguistic guessing game (K. Goodman, 1969). Therefore, abandon the role of the teacher as an error seeker, and teach learners to become more productive guessers by encouraging an appropriate degree of risk-taking.

4. Reading involves language. Therefore, become knowledgeable of what the descriptive sciences of linguistics and psycholinguistics have to offer. This is not to say we ought to teach linguistics or psycholinguistics to children, but rather that we must become more aware of the insights into reading that linguistics and psycholinguistics can produce.

5. Reading is dynamic. Therefore, entertain no expectations that it will remain the same very long for a group or an individual. The product view is like a snapshot of a runner in progress. The situation is different before the film is developed. Implications for grouping techniques are obvious. Flexible approaches that permit constant adjustments are in order. Task oriented grouping seems more productive than grouping on the basis of one characteristic, an estimated reading level in one interest area, for instance.

6. Reading is complex. Therefore accept the linear view presented here as a simplification of the process put forth for purposes of discussion; an invitation to further investigation (See K. Goodman, 1970, pp. 30-31).

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